Appl. No. 09/672,116
Amdt. dated September 15, 2005
Examining Group: 3624

PATENT

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.   (Currently amended) A computer-implemented method of ~~constructing a~~ allocating investment funds to a plurality of assets to construct an investment portfolio having a utility defined by at least a first function U_1 for positive rates of returns and a second function U_2 for negative rates of returns, the computer-implemented method comprising:

~~selecting a plurality of assets in the portfolio; and~~

~~maximizing~~ allocating the investment funds to the said plurality of assets to maximize an expected utility of the investment portfolio; wherein the at least first function U_1 is a log-utility function wherein said log-utility function is at least characterized by the following:

$$U_1 = 1 + \ln(1 + r) \quad \text{for } r \geq 0$$

where U_1 represents the portfolio's utility to the portfolio holder, r represents the portfolio's return, and ln is a symbol for natural logarithm, and wherein the at least second function U_2 is a power-utility function wherein said power-utility function is at least characterized by the following:

$$U_2 = \frac{1}{\gamma}\left[(1+r)^\gamma + \gamma - 1\right] \quad \text{for } r < 0$$

where U_2 represents the portfolio's utility to the portfolio holder, r represents the portfolio's return, and γ represents the ~~risk~~ loss-aversion of the portfolio holder and has a value of less than or equal to 0.

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2-4. Canceled

5. (Currently amended) The method of Claim 1 wherein ~~the act of maximizing~~ allocating the investment funds to the plurality of assets in the investment portfolio to maximize the expected utility of the portfolio further comprises ~~the act of selecting a weight for each asset in the portfolio~~:

determining an optimal investment weight for each one of the plurality of assets in the investment portfolio.

6. (Currently Amended) The method of Claim 5 wherein ~~the act of selecting a weight for each asset in the~~ determining an optimal investment weight for each one of the plurality of assets in the investment portfolio further comprises:

computing the ~~utility of the portfolio for a plurality of economic events and computing the~~ investment portfolio's return for each one s of the plurality of economic events in accordance with the following:

$$r_s = \sum_{i=1}^{N} w_i r_{is}$$

where r_s corresponds to the portfolio's return in economic event s, w_i corresponds to a weight of asset i in the portfolio, r_{is} corresponds to a return for asset i in economic event s; i corresponds to an asset number varying from 1 to N, and wherein N corresponds to the number of assets from which the portfolio is selected;

computing U_s the utility of the portfolio for the portfolio return r_s in economic event s wherein U_s is the function U_1 for $r_s \geq 0$, and U_s is the function U_2 for $r_s < 0$;

multiplying the utility of the portfolio computed for each economic event with the probability of the occurrence of that economic event thereby generating a plurality of values

$p_s U_s$ wherein U_s corresponds to the portfolio holder's utility in the economic event s; p_s

corresponds to a probability of occurrence of the economic event s, ~~and~~

summing the values to compute an expected utility as defined below:

$$E(U) = \sum_{s=1}^{S} p_s U_s$$

where S corresponds to the number of possible economic events and s varies from 1 to S; and

optimizing the investment weight w_i for each of the N assets from which the

portfolio is selected to maximize the portfolio's expected utility $E(U)$.

7.   Canceled

8.   (Currently amended) A computer system for ~~constructing a~~ allocating

investment funds to a plurality of assets to construct an investment portfolio having a utility

defined by at least a first function U_1 for positive rates of returns and a second function U_2 for

negative rates of returns, the computer system comprising:

a processor; and

a memory coupled to the processor, said memory storing a plurality of code

modules for execution by the processor, the plurality of code modules comprising:

~~a code module for selecting a plurality of assets in the portfolio; and~~

~~a code module for maximizing~~ code modules for allocating the investment funds

to the said plurality of assets to maximize an expected utility of the investment portfolio; wherein

the at least first function U_1 is a log-utility function wherein said log-utility function is at least

characterized by the following:

$U_1 = 1 + \ln(1+r)$ for $r \geq 0$

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where U_1 represents the portfolio's utility to the portfolio holder, r represents the portfolio's return, and ln is a symbol for natural logarithm, and wherein the at least second function U_2 is a power-utility function wherein said power-utility function is at least characterized by the following:

$$U_2 = \frac{1}{\gamma}\left[(1+r)^{\gamma} + \gamma - 1\right] \quad \text{for } r < 0$$

where U_2 represents the portfolio's utility to the portfolio holder, r represents the portfolio's return, and γ represents the ~~risk~~ loss-aversion of the portfolio holder and has a value of less than or equal to 0.

9-11   Canceled

12.   (Currently amended) The computer system of Claim 8 wherein the code ~~module for maximizing~~ modules for allocating the investment funds to the plurality of assets in the investment portfolio to maximize the expected utility of the portfolio further ~~comprises a code module for selecting a weight for each one of the plurality of assets in the portfolio~~ comprise:
        code modules for determining an optimal investment weight for each one of the plurality of assets in the investment portfolio.

13.   (Currently amended) The computer system of Claim 12, wherein the code ~~module for selecting a weight for each one of the plurality of assets in the portfolio further comprises~~ modules for determining an optimal investment weight for each one of the plurality of assets in the investment portfolio further comprise:
        code module for computing the ~~utility of the portfolio for a plurality of economic events and computing the~~ investment portfolio's return for each one s of the plurality of economic events in accordance with the following:

$$r_s = \sum_{i=1}^{N} w_i r_{is}$$

where r_s corresponds to the portfolio's return in economic event s, w_i corresponds to a weight

of asset i in the portfolio, r_{is} corresponds to a return for asset i in economic event s; i

corresponds to an asset number varying from 1 to N, and wherein N corresponds to the number

of assets from which the portfolio is selected;

> code module for computing U_s the utility of the portfolio for the portfolio return
>
> r_s in economic event s; wherein U_s is the function U_1 for $r_s \geq 0$, and U_s is the function U_2
>
> for $r_s < 0$;

code module for multiplying the utility of the portfolio computed for each one of

the plurality of economic events with the probability of the occurrence of that economic event

thereby generating a plurality of values $p_s U_s$ wherein U_s corresponds to the portfolio holder's

utility in the economic event s; p_s corresponds to a probability of occurrence of the economic

event s; ~~and~~

code module for summing the values to compute an expected utility as defined

below:

$$E(U) = \sum_{s=1}^{S} p_s U_s$$

where S corresponds to the number of possible economic events and s varies from 1 to S; and

> code module for optimizing the investment weight w_i for each of the N assets
>
> from which the portfolio is selected to maximize the portfolio's expected utility $E(U)$.

14-31   Canceled